PROJECT TITLE : MATERIAL DEVELOPMENT

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1. NEW FILTRATION MATERIAL

Eastman Tow 8.0/64.000 Y and 8.0/80.000 R

Objective

Search for a new filtration material in order to attain the objective of project COCONUT (386).

Summary

Based on the results given by the cigarette construction model for project COCONUT, Eastman was asked to supply us with a 8.0 denier per filament tow with a high total denier. The qualities mentioned above were received. The filter rod RTD for the 8.0/64.000 Y tow was 320 mm WG, while for the 8.0/80.000 R it was 335 mm WG for a 108 mm filter rod. (1)

Description of Samples and Results

MLF-CH cigarettes were made with these filter rods. The cigarettes were smoked twice for the determination of TPM, DPM, SN values and thrice for CO and NO. The mean values obtained for these determinations are given in the table on the following page.

Conclusion

The optimum was reached with these prototypes for the given objectives. We noticed that we are still low in the total RTD of the cigarette. Prototypes No. 2 and 4 are within the objectives of tar and nicotine but they are 1 to 1.5 mg/cig too high in CO delivery. Further dilution of the prototypes allows us to attain the CO objective but then the tar and nicotine deliveries are out of limits (prototypes 1 and 3). The excess of CO on prototypes No. 2 and 4 could be reduced if E-30179 cigarette paper was used on these prototypes. (2)

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Prototype N	1	2	3	4
Tow Item	8.0/64.000 Y	8.0/64.000 Y	8.0/80.000 R	8.0/80.000 R
Dimensions mm	7.92/18/79	7.92/18/79	7.91/18/79	7.91/18/79
Tobacco Weight at 12% MC mg	785	791	782	783
RTD cig mm WG	66	68	73	74
RTD Filter mm WG	52	52	56	56
Dilution % US	49	43	46	40
Filter Efficiency %	30	30	34	34
CO mg/cig	8.7	11.1	10.0	11.5
NO mg/cig	0.14	0.16	0.15	0.17
TPM mg/cig	15.2	16.7	15.3	17.2
DPM mg/cig	13.6	14.8	13.8	15.7
SN mg/cig	1.07	1.12	1.03	1.12
Tar mg/cig	12.5	13.7	12.8	14.6
Puff Count	10.2	10.0	10.0	9.9

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Follow-up

On the basis of the results given by prototype 4, Eastman was requested to submit a 5.0/60.000 Y tow. In our opinion, this tow will give a higher RTD while maintaining the filter efficiency at the same level as the 8.0/80.000 R tow. Further development work will continue with this tow.

2. TIPPING PAPER

2.1. Malaucène Micro-Laser Perforated Tipping Paper

Objective

Possible replacement of existing tipping paper on MLF-CH and MLK-CH brands with laser type perforated tipping paper.

Summary

MLF-CH and MLK-CH cigarettes are produced with Benkert Z3/60 electro-perforated tipping paper (air permeability: 60 l/h 4 cm^{-1}). Due to the deterioration of Benkert's quality, the perforation of the tipping has become visible. Trials have been carried out with laser perforated tipping paper. Although the smoke delivery objectives were attained the taste evaluation was contradictory. Lately new MLK-CH samples were prepared and analysed.

Description of Samples and Results

The smoke yield and some of the important physical characteristics of the MLK-CH cigarettes are given in the table on the following page.

Comments

The four different types of tipping paper used on the prototypes did not show any significant difference compared with the standard from the delivery point of view.

Follow-up

The cigarettes will be evaluated by different panels and a final decision will be based on the taste results.

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Type of Tipping Paper	3M 0.11.6.5	3M 0.15.4.5	2M 0.22.7.5	4M 0.075.5.5	Z3/60
Dilution % US	18 ± 4	20 ± 3	20 ± 3	18 ± 2	17 ± 2
Dimensions mm	7.95/20/84	7.97/20/84	7.95/20/84	7.96/20/84	7.95/20/84
Filter Efficiency %	42	42	42	42	42
Tobacco Weight at 12% MC mg	807	812	807	808	815
Filter RTD mm WG	65	65	64	64	66
Total RTD mm WG	100	98	100	99	103
CO mg/cig	15.2	15.7	15.3	15.9	15.9
NO mg/cig	0.21	0.22	0.22	0.22	0.23
TPM mg/cig	19.9	19.4	19.6	20.5	19.8
DPM mg/cig	17.8	17.2	17.3	18.1	17.7
SN mg/cig	1.15	1.12	1.15	1.18	1.14
Puff count	9.7	9.8	9.7	9.8	9.3
HCN µg/cig	213	206	205	219	231
Total Aldehydes mg/cig	1.35	1.30	1.28	1.33	1.33
TA %	1.69	1.67	1.67	1.85	1.77
RS %	7.9	7.9	7.0	8.2	7.7
Nitrate-N %	0.19	0.19	0.19	0.20	0.20
Ammonia-N %	0.29	0.29	0.30	0.31	0.31

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2.2. Ecusta Micro-mechanically Perforated Tipping Paper

Objective

Possible replacement of the existing paper on MLF-CH and MLK-CH with micro-mechanically perforated tipping paper.

Summary

Ecusta submitted micro-mechanically perforated tipping paper. The first two trials on MLK-CH to substitute the existing Z3/60 were negative: tastewise the samples were not acceptable in one case, in the other case the dilution was too low. Recently Ecusta submitted a new sample, with a permeability of air of 60 l/h 4 cm^{-1}.

Description of Samples and Results

MLK-CH type cigarettes were made with this tipping paper and compared with MLK-CH standard cigarettes. The dilution level attained was too high in comparison with the standard. A summary of the analytical results obtained on the prototype is given in the table below.

	Ecusta TOD-09791 Trial	Z3/60 Control
Dilution % US	31 ± 4	17 ± 2
CO mg/cig	12.9	15.9
NO mg/cig	0.20	0.23
TPM mg/cig	17.1	19.8
DPM mg/cig	15.3	17.7
SN mg/cig	1.03	1.14
Puff count	9.8	9.3
HCN µg/cig	156	231
Total Aldehydes "mg/cig"	1.12	1.33

Comments

The dilution level reached on the prototypes with this tipping paper was too high compared with the standard. Earlier trials with other tipping papers with the same permeability (all other cigarette factors remaining constant) gave different dilution results (3,4). As all trials gave different dilution levels (13-31%), Ecusta will be contacted on this problem.

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3. ASSISTANCE TO PROJECTS

3.1. VIEJO

Based on the results given by the cigarette construction model, a 2.5/51.000 Y tow was proposed as filtration material with 60% dilution, in order to attain the objectives of this project.

3.2 KURT

A 2.5/48.000 Y tow was proposed with 39% dilution, in order to attain the objectives of this project.

References

1. Erkohen-E. Monthly Report (August 1981)
2. Letter from Erkohen-E. to Wattenspapier, March 20th, 1981
3. Erkohen-E. Monthly Report (July 1980)
4. Erkohen-E. Monthly Report (February 1981).

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